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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/759,971	01/15/2004	Klaus Hartig	44046.203.143.22	8328

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EXAMINER

PIZIALI, ANDREW T

ART UNIT	PAPER NUMBER
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1771

DATE MAILED: 07/12/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/759,971

Applicant(s)

HARTIG ET AL.

Examiner

Andrew T Piziali

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 January 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 January 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>9/21/2004</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Drawings

1. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign mentioned in the description: On page 6, line 11, reference is made to reference character 14, but reference character 14 does not appear in the drawing. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

2. The disclosure is objected to because of the following informality: The status of parent application 09/728,435 has not been updated as now abandoned. Appropriate correction is required.

3. The disclosure is objected to because of the following informalities: On page 1, line 12, the term “with•temperable” is present. On page 3, line 6, the word “unsalable” is present. Appropriate correction is required.

Claim Objections

4. Claim 9 is objected to because of the following informalities: The claim refers to a “second intermediate dielectric layers” and a “third intermediate dielectric layers,” but the claim should read “second intermediate dielectric layer” and “third intermediate dielectric layer.” Appropriate correction is requested.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1-7, 9-17 and 19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 6,090,481 to Depauw et al. (hereinafter referred to as Depauw).

Regarding claims 1-7, 9-17 and 19-20, Depauw discloses a coating carried by a substrate having a surface comprising from the substrate surface outwardly an inner dielectric layer, a first infrared reflective layer, an intermediate dielectric layer, a second infrared reflective layer, and an outer dielectric layer (column 3, lines 26-39). Depauw discloses that each dielectric layer can be a composite layer formed of successive subsidiary layers of different compositions from each other (column 5, lines 31-40 and Table A). Depauw discloses that the dielectric materials include zinc oxide, tin oxide, and silicon nitride (column 5, lines 23-30). Depauw discloses that the physical thickness of each layer of a composite layer may be no more than about 250Å (Table A). Therefore, Depauw discloses a coating carried by a substrate comprising an intermediate dielectric stack comprising zinc oxide/silicon nitride/zinc oxide/silicon nitride/zinc oxide.

Depauw does not mention a specific embodiment wherein each of the layers of the first dielectric have an optical thickness greater than the optical thickness of any of the layers of the second dielectric, but Depauw does disclose that it is known in the art to use a variety of layer thickness combinations (Table A). Depauw does not specifically mention the claimed thickness

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construction, but modifying the thickness construction would have been obvious at the time of applicant's invention because the use of preferred materials and the optimum or workable ranges discovered by routine experimentation is ordinarily within the skill of the art. Further, it would have been obvious to modify the thickness construction because the applicant has not disclosed that having the specific thickness construction solves any stated problem or is for any particular purpose (see the paragraph bridging pages 10 and 11). Therefore, considering that the current applicant fails to teach or suggest unexpected results relating to the claimed thickness limitation, and considering that the applicant discloses that if desired all the layers of the invention may actually have the same thickness (see the paragraph bridging pages 10 and 11), it would have been obvious to one having ordinary skill in the art at the time the invention was made to adjust the thicknesses of the layers, such as currently claimed, because it is understood by one of ordinary skill in the art that the layer thicknesses determine properties such as transmittance, reflectance, emissivity, and color and because it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art.

Regarding claims 7, 17 and 20, Depauw discloses that the layers are preferably applied by sputtering (column 5, lines 60-61). The applicants disclose in the specification that zinc oxide is a polycrystalline material when applied in thin films via sputtering (see specification page 12, lines 17-18). The applicants also disclose that thin layers of silicon nitride can be thought of as substantially amorphous even after tempering (see specification page 12, lines 22-23). Therefore, it appears that the zinc oxide layers of Depauw are polycrystalline and the silicon nitride layers of Depauw are amorphous.

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7. Claims 8 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 6,090,481 to Depauw as applied to claims 1-7, 9-17 and 19-20 above, and further in view of USPN 5,837,361 to Glaser et al. (hereinafter referred to as Glaser).

Depauw discloses that a sacrificial metal layer, such as a titanium layer, may be disposed above each infrared reflective silver layer (column 5, lines 11-12 and lines 46-54), but DePauw does not specifically mention a layer of niobium. Glaser discloses that titanium and niobium are known sacrificial metal layers (column 3, lines 49-61). It would have been obvious to one having ordinary skill in the art at the time the invention was made to make the sacrificial metal layer from any suitable sacrificial metal, such as niobium, as taught by Glaser, because it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability.

Conclusion

8. The following patents are cited to further show the state of the art with respect to low emissivity coatings:

USPN 4,965,121 to Young et al.

USPN 5,834,103 to Bond et al.

USPN 6,042,934 to Guiselin et al.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew T Piziali whose telephone number is (571) 272-1541. The examiner can normally be reached on Monday-Friday (8:00-4:30).

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Terrel Morris can be reached on (571) 272-1478. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

atp

gtp 7/8/05
ANDREW T. PIZIALI
PATENT EXAMINER